IN THE UNITED STATES PATENT OFFICE

APPLICATION OF   )
)

BRENT BEAMER   )
)

SERIAL NUMBER 09/720,932   )
)

FILED JANUARY 2, 2001   )
)

TITLE AN ELECTROSTATIC   )
SHIELDING LOW CHARGING   )
RETAINING MOISTURE BARRIER)
FILM   )

AFFIDAVIT UNDER RULE 1.132

STATE OF NORTH CAROLINA   )
) SS
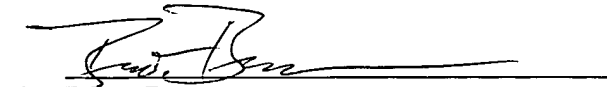COUNTY OF LEE   )

BRENT BEAMER, being duly sworn, does hereby depose and say as follows:

1. I graduated from Indiana State University with a degree in electronics. Following my education, I have worked in the electrostatic engineering field. I have been active in the Electrostatic Discharge Association and am currently the chairman of the Packaging Standards Development Workgroup for that association. I have previously been a member of the board of directors for the ESD Association and chairman of the Board Candidate Selection Committee. I have authored a number of papers in the area including most recently "ESD Packaging Spec Gets New Life" published in Evaluation Engineering Magazine in March of 2001. I have been technical director for Static Control Components, Inc., ESD products division since 1993. My work includes responsibility for ESD product development, quality assurance, and Static Control Components, Inc.'s electrostatic laboratory.

2. Lamination bond strength is the measure of how strongly two materials are joined together by an adhesive lamination process. In the situation where two layers of metallized polyester are joined by an adhesive lamination process, the bond between the metallized surface and a polyester surface will be stronger than the bond between two metallized surfaces. A stronger bond is desired so that the layers do not separate or crack during the process of bag or envelope construction or during the stress of vacuum sealing. To demonstrate the improved lamination bond strength of polyester to metallized surface lamination as compared to metallized surface to metallized surface lamination, I made two structures. These structures are illustrated in the attached drawing, see Figure One. I tested these structures for lamination bond

1
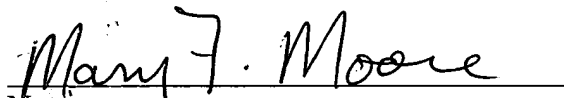
strength using a tensile tester per ASTM D882 test. Photographs showing the test fixture are shown in the attached Figure Two.

3. The test results showed the average lamination bond strength of a polyester to metallized surface lamination as approximately .62 lbs. as compared to only .16 lbs. for laminating of a metallized surface to a metallized surface, see Figure Three. Metallized surface to metallized surface layers as disclosed in the Golike patent, US #5,091,229, will be more prone to delaminate than the patent that is the subject of this application.

4. As is well known to those skilled in the art, the failure of the bond may also result in cracking of the metallization layers. Any cracks, holes, or defects in the metallization layer will defeat the use of the material as a moisture barrier.

Further Affiant sayeth not.

Brent Beamer

Sworn and subscribed to before me
this __13rd__ day of November, 2002.

Notary

My Commission expires: __3/23/05__

2

Polyester to Metallization Lamination

Metallization
Polyester
Adhesive
Polyester
Metallization
Adhesive
Polyethylene
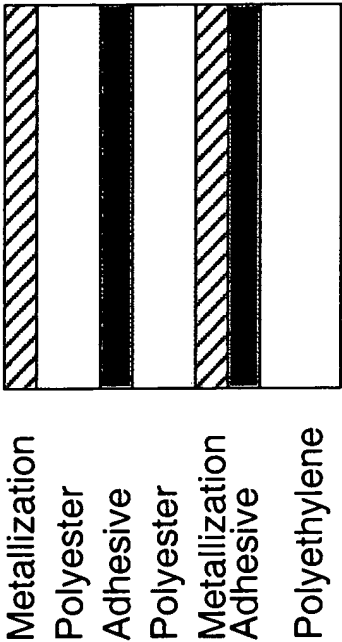
Metallization to Metallization Lamination

Polyester
Metallization
Adhesive
Metallization
Polyester
Adhesive
Polyethylene

Figure Two
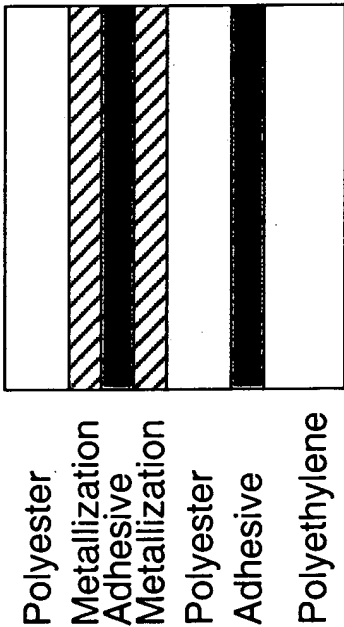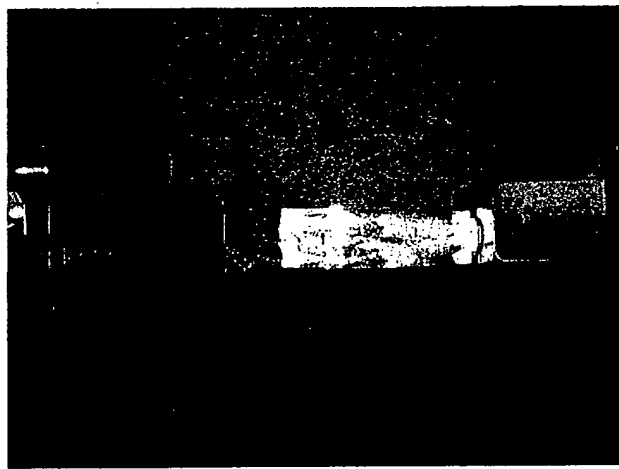
Specimen with higher bond strength.

Photos 1 and 2
Polyester
Bonded to
Metallization.

Test Fixture per ASTM D882.
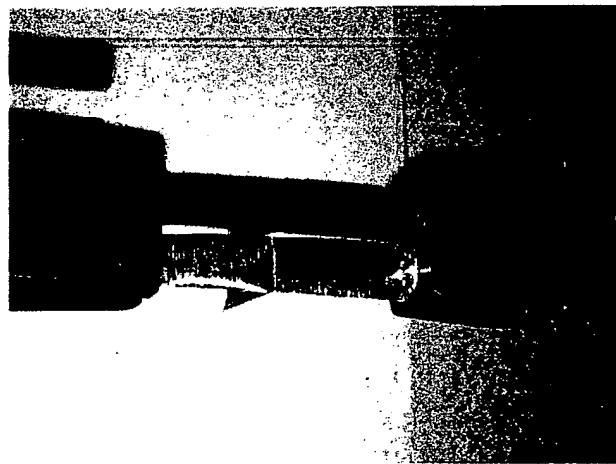
Specimen with weaker bond strength.

Photos 3 and 4
Polyester
Bonded to
Metallization.

Test Fixture per ASTM D882.

Figure Three

Bond Strength

Load (lbs) (vertical axis: 0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8)

Time (horizontal axis: 0, 0.07, 0.12, 0.17, 0.22, 0.27, 0.32, 0.37, 0.43, 0.48, 0.53, 0.58, 0.63, 0.68, 0.73, 0.78, 0.84, 0.89, 0.94, 0.99, 1.05, 1.1, 1.16, 1.21, 1.26, 1.32, 1.37, 1.43, 1.48, 1.54, 1.59, 1.64, 1.7, 1.75, 1.81, 1.86, 1.92)

Metal to Polyester   metal to metal
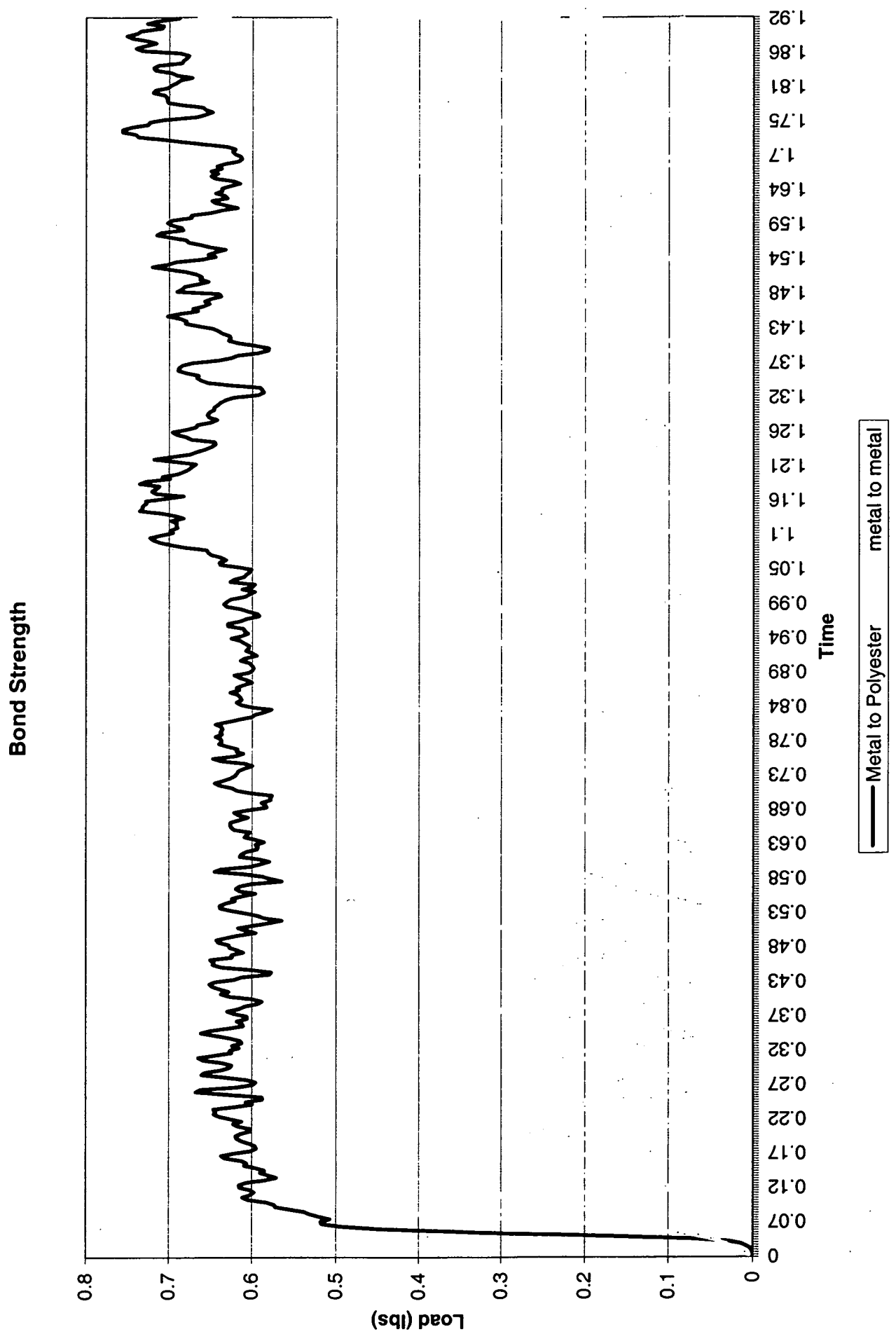
	Test Method	ASTM D 882 TENSILE/SEAL	
	Sample I. D.	Metal to Polyester	Metal to Metal
	Specimen Number	1	2
	TIME (Min)	LOAD (Lb)	LOAD (Lb)
	0.0001	0	0.00478
	0.018383	0	0.010242
	0.021917	0.001366	0.015705
	0.025567	0.002731	0.019119
	0.029217	0.007511	0.025265
	0.032867	0.014339	0.032093
	0.036533	0.029362	0.039604
	0.0402	0.073746	0.050529
	0.043867	0.167976	0.064869
	0.047533	0.285423	0.082623
	0.0512	0.363949	0.105839
	0.054867	0.447254	0.133835
	0.05885	0.494369	0.165245
	0.062517	0.517586	0.197338
	0.066167	0.518951	0.238308
	0.069833	0.507343	0.28952
	0.0735	0.520317	0.342781
	0.077167	0.531925	0.404236
	0.080817	0.538753	0.329807
	0.084483	0.555141	0.188461
	0.08815	0.572212	0.172073
	0.0918	0.574261	0.191193
	0.095467	0.583137	0.22192
	0.099133	0.604305	0.259476
	0.1028	0.611133	0.298397
	0.106433	0.602257	0.308639
	0.110083	0.597477	0.13998
	0.113733	0.601574	0.095596
	0.11745	0.614548	0.096962
	0.121083	0.61523	0.112667
	0.12475	0.607037	0.133152
	0.128417	0.584503	0.157051
	0.1321	0.571529	0.185047
	0.135767	0.580406	0.213726
	0.139433	0.589966	0.2267
	0.1431	0.585186	0.130421
	0.146767	0.595428	0.111984
	0.150433	0.609085	0.119495
	0.1541	0.606354	0.135883
	0.157767	0.611816	0.157051
	0.161433	0.631618	0.18095
	0.165083	0.636398	0.198704
	0.16875	0.621376	0.133152
	0.172417	0.600891	0.105156
	0.176083	0.594746	0.109253
	0.17975	0.596111	0.125641
	0.183417	0.602939	0.147491
	0.187083	0.611816	0.173439
	0.19075	0.617962	0.204166
	0.194417	0.619327	0.236942
	0.198083	0.613182	0.273815
	0.20175	0.602257	0.276546
	0.205383	0.601574	0.127689
	0.20905	0.616596	0.090134
	0.212717	0.622059	0.088768
	0.216383	0.611816	0.09901
	0.220033	0.62479	0.112667
	0.2237	0.638447	0.130421
	0.227367	0.645275	0.151588

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0.246033	0.607037	0.211678
0.2497	0.587917	0.158417
0.253367	0.5886	0.082623
0.257033	0.628204	0.071697
0.2607	0.667126	0.078526
0.264367	0.661663	0.091499
0.268017	0.617962	0.109936
0.271683	0.598843	0.131786
0.275317	0.595428	0.158417
0.278967	0.606354	0.185047
0.282633	0.631618	0.107887
0.2863	0.660297	0.088085
0.289933	0.6562	0.092182
0.2936	0.636398	0.105156
0.297267	0.626839	0.12291
0.300933	0.624107	0.142712
0.3046	0.635715	0.166611
0.308267	0.658249	0.19529
0.311917	0.664394	0.226017
0.315583	0.643909	0.260841
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0.322917	0.626156	0.136566
0.326583	0.61523	0.117447
0.33025	0.623424	0.131786
0.333883	0.611816	0.148174
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0.359533	0.610451	0.129055
0.363183	0.611816	0.150223
0.36685	0.617962	0.174805
0.370517	0.605671	0.204166
0.374167	0.606354	0.244453
0.377833	0.621376	0.285423
0.3815	0.62957	0.328442
0.385167	0.61523	0.230797
0.388833	0.609085	0.137249
0.3925	0.59338	0.127689
0.396167	0.5886	0.143394
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0.410833	0.627521	0.094913
0.414483	0.638447	0.066917
0.41815	0.647323	0.066917
0.4218	0.650738	0.075794
0.425467	0.643909	0.08672
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0.436467	0.579723	0.138615
0.440117	0.577675	0.163197
0.443783	0.602257	0.191875
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0.454767	0.645275	0.28952
0.458433	0.650055	0.189827
0.46265	0.623424	0.157734
0.4663	0.624107	0.175487
0.469967	0.610451	0.183681

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0.4956	0.615913	0.191875
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0.59815	0.601574	0.141346
0.601817	0.589966	0.165245
0.605483	0.579723	0.118813
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0.61645	0.612499	0.071697
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0.62745	0.59338	0.070332
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0.634767	0.585869	0.092182
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0.645717	0.606354	0.146809
0.649367	0.602257	0.173439
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0.66035	0.626156	0.18095
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0.98355	0.613182	0.348926
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1.09675	0.723118	0.107887
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1.104617	0.695122	0.100376
1.108483	0.698536	0.105156
1.11215	0.689659	0.120861
1.1159	0.691025	0.142029
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1.1279	0.682148	0.232162
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1.135767	0.708778	0.236259
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1.143517	0.731995	0.169342
1.147383	0.731995	0.187096
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1.1591	0.703316	0.083988
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1.225233	0.697853	0.230797
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1.306783	0.641178	0.156368
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1.34935	0.666443	0.175487
1.353067	0.664394	0.208263
1.356817	0.679417	0.24855
1.360833	0.688976	0.290203
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1.372533	0.672588	0.301128
1.3764	0.641178	0.206898
1.380417	0.625473	0.205532
1.38425	0.617962	0.230114
1.388117	0.59338	0.129738
1.39195	0.581772	0.076477
1.396	0.581089	0.070332
1.399817	0.596794	0.07716
1.4037	0.616596	0.090816
1.407583	0.628204	0.105156
1.411317	0.626156	0.12291
1.41515	0.626839	0.145443
1.419167	0.635715	0.170708
1.423183	0.640495	0.202118
1.427183	0.647323	0.242405
1.43105	0.665077	0.215092
1.434917	0.680099	0.129055
1.4387	0.678734	0.120178
1.442667	0.686245	0.134518
1.446467	0.70195	0.156368
1.450333	0.687611	0.176853
1.454	0.665077	0.161148
1.457883	0.671223	0.178219
1.461867	0.658249	0.209629
1.465733	0.650738	0.22192

1.?9617	0.656883	0.256744
1.?3367	0.648689	0.271767
1.4771	0.637081	0.18095
1.481383	0.639812	0.178219
1.485267	0.690342	0.206215
1.48915	0.684196	0.195972
1.493133	0.681465	0.192558
1.497017	0.665077	0.22192
1.5009	0.652103	0.244453
1.504783	0.663029	0.210995
1.508783	0.660297	0.193924
1.512667	0.667126	0.189144
1.516483	0.679417	0.203484
1.520367	0.699901	0.176853
1.524367	0.720386	0.19051
1.528233	0.701267	0.162514
1.531967	0.691707	0.103107
1.5357	0.660297	0.100376
1.539833	0.643909	0.112667
1.543817	0.652786	0.131786
1.5477	0.643909	0.155003
1.551567	0.631618	0.178219
1.555567	0.649372	0.204849
1.559467	0.661663	0.241039
1.56335	0.676685	0.175487
1.5672	0.679417	0.147491
1.571183	0.69717	0.161148
1.575	0.714924	0.189144
1.578867	0.709461	0.225334
1.582883	0.682831	0.268352
1.586783	0.684879	0.319565
1.5905	0.696487	0.247185
1.5942	0.70195	0.152271
1.598083	0.696487	0.14476
1.6023	0.672588	0.118813
1.606167	0.673271	0.114033
1.609883	0.648689	0.129055
1.61375	0.636398	0.152271
1.61775	0.617279	0.157051
1.621633	0.630253	0.174122
1.625517	0.644592	0.197338
1.6293	0.648006	0.128372
1.633367	0.62957	0.109253
1.637183	0.632301	0.11813
1.64105	0.643909	0.137932
1.6449	0.635715	0.163197
1.648633	0.636398	0.193924
1.65235	0.626156	0.208263
1.6562	0.614548	0.200752
1.660117	0.622742	0.228748
1.664067	0.644592	0.264938
1.668083	0.649372	0.311371
1.671983	0.641178	0.36668
1.675883	0.649372	0.419941
1.67975	0.636398	0.198704
1.68375	0.642544	0.097645
1.687633	0.632301	0.079891
1.69145	0.615913	0.083988
1.695317	0.612499	0.097645
1.699333	0.613865	0.114716
1.703217	0.620693	0.1352
1.707083	0.623424	0.160465
1.710817	0.62001	0.188461
1.71455	0.62957	0.19051
1.71855	0.657566	0.210312
1.722717	0.682831	0.247185

...7266	0.70673	0.213043
...0583	0.737457	0.155685
1.734383	0.740189	0.14954
1.738233	0.755894	0.165928
1.74195	0.755894	0.19529
1.74575	0.744968	0.23148
1.749817	0.725166	0.276546
1.753667	0.723801	0.329124
1.757467	0.706047	0.213726
1.761333	0.667126	0.105839
1.765333	0.655517	0.08672
1.769217	0.647323	0.093548
1.77295	0.655517	0.107204
1.7767	0.658249	0.125641
1.781017	0.683514	0.148857
1.7849	0.701267	0.174122
1.788733	0.702633	0.148857
1.792733	0.702633	0.15432
1.7966	0.705364	0.177536
1.800483	0.719704	0.210995
1.804283	0.716972	0.250599
1.808233	0.701267	0.243771
1.81215	0.69717	0.179584
1.816017	0.690342	0.187096
1.8199	0.686245	0.219189
1.823767	0.671905	0.261524
1.827767	0.690342	0.307957
1.831483	0.69717	0.172073
1.835217	0.716289	0.119495
1.8392	0.719021	0.124275
1.843283	0.712875	0.103107
1.84715	0.684196	0.083988
1.85105	0.682831	0.090134
1.855067	0.678051	0.101742
1.85895	0.676002	0.118813
1.862833	0.686928	0.13998
1.86665	0.732677	0.165928
1.870717	0.740189	0.198021
1.874533	0.729263	0.237625
1.878433	0.715607	0.282009
1.882283	0.725849	0.269718
1.886267	0.744285	0.159782
1.89205	0.751114	0.157051
1.895717	0.73814	0.18095
1.899733	0.734043	0.213043
1.903867	0.708778	0.251965
1.907733	0.70673	0.295666
1.911617	0.726532	0.172073
1.915617	0.713558	0.095596
1.919483	0.687611	0.083305

Average:	0.6269	0.1616
Max	0.7559	0.4199
Std	0.0939	0.0681